Training need assessment report on livestock feed and forage production and utilization

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International Livestock Research Institute

Report

CGIAR

AICCRA

Accelerating the Impact of CGIAR Climate Research for Africa

Training need assessment report on livestock feed and forage production and utilization

BACKGROUND ON THE INITIATION OF THE CAPACITY DEVELOPMENT NEED ASSESSMENT

The capacity development need assessment initiative is part of the feed and forage innovation value chain of the Accelerating Impact of CGIAR Climate Research in Africa (AICCRA) project of Ethiopian. AICCRA is a three years (2021-2023) project that operates in six African countries including Ethiopia. The project is supported by a grant from the International Development Association (IDA) of the World Bank and will enhance research and capacity-building activities by CGIAR and its partners. AICCRA in Ethiopia aims to strengthen the capacity of targeted national partners and stakeholders of CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) East Africa to access and implement at scale validated climate-smart agriculture technologies, climate information services, and climate-informed digital ag-advisories to build the resilience of agri-food systems. The value chains considered for AICCRA project in Ethiopia include beans, wheat, small ruminant and livestock feed and forge options.

The AICCRA project in Ethiopia has eight research activities. Livestock feed and forage options value chain contributes to four of the eight activities, which include capacity building to support implementation of climate-smart agriculture (CSA) technology packages; identification of climate- and gender and social inclusion-smartness of CSA packages; prioritization and awareness increase of best-bet CSA options and approaches for key value chains; and integration of climate-smart options and tailored CSI advisory systems for specific value chains. The current report on capacity need assessment is one of the three deliverables that the International Livestock Research Institute (ILRI) Africa RISING research team promised to produce and submit for AICCRA-Ethiopia project in 2021.

Livestock feed and forage situation in the highlands of Ethiopia

Despite having one of the highest number of livestock in Africa, the Ethiopian traditional livestock management system is not responding to the expected contributions of the sector. Difficulties of getting reliable and quality livestock feed resources, poor post-harvest feed handling, and utilization practices are critical constraints of Ethiopia's livestock sector, along with other key constraints such as animal health and breeding services (Mekonnen et al. 2021).

The feed resource base in the mixed farming system of the Ethiopian highlands has been declining due to the continual conversion of grazing lands to arable lands and concomitant loss of fertility/land degradation on the remaining pasture lands. This has forced farmers to heavily rely on feeding crop residues to their livestock. For a sustainable improvement in crop-livestock productivity, it is therefore imperative to improve the feed resource base of the mixed farming system in the highlands by introducing well-adapted and high yielding fodder crops and efficient utilization practices (Mekonnen et al. 2021).

The Africa Research in Sustainable Intensification for the Next Generation (Africa RISING) project in the Ethiopian highlands has introduced integrated feed and forage development interventions such as cultivated forages, fodder trees, improved feeding troughs, feed conservation practices and storage sheds in the Ethiopian highlands to address livestock feed and forage related challenges that can contribute to the improvement of livestock productivity, income diversification and household nutrition (https://africa-rising.net/ethiopian-highlands/).

While Africa RISING feed and forage research and scaling work reached significant number of beneficiaries, there are plenty of rooms for improvement and scaling. A recent paper by Mekonnen et al (2021) on Africa RISING achievements highlighted the importance of continued capacity building for farmers and extension staff to create awareness and build their technical capacity. The authors also highlighted the importance of taking an integrated approach that addresses policy, planning and operation related constraints of feed and forage innovations. Further scaling, the authors argued, also requires tackling critical bottlenecks such as the weak forage seed system requiring special attention.

The AICCRA initiative aims at building on Africa RISING and related CGIAR based feed and forage innovations in Ethiopia and scaling them in wider geographies and beneficiaries. The feed and forage innovation scaling component of the initiative has various components including technical capacity building through tailored training, assessing climate-smartness and social inclusiveness of feed and forage innovations, developing risk communication materials for various media and platforms among others.

This report presents scaling activities related to the first component of the initiative, capacity building through tailored training programs for farmers, extension, media and finance related partners. This report aims at reporting the results of the training needs assessment study conducted among various partners and the implications of the results for the training module preparation.

Framing the training needs assessment

Before starting off a training, trainers need to conduct training needs assessment even when the training needs seem apparent. Brown (2002) identified four reasons why it is worth to conduct training needs assessment. First, training needs assessment could help to identify specific problem areas in an organization that could get solved through training. Second, training needs assessments could help in securing essential management support for planned training programs. Third, when properly done, training needs assessments could help in data collection on changes brought about by training delivery. Finally, training needs assessments could help in justifying the benefit of training vis-à-vis the costs involved.

A training need is said to be a gap between current and desired results. The needs may arise at outcome, output and/or product levels. Gaps could also be categorized in terms of 'means', including process and input. The process aspect includes methods, approaches, and interaction. The input aspect includes resources required. In broad terms training needs assessment is a process for identifying training needs and placing them in priority (Iqbal and Khan 2011).

Depending on resources availability and buy-in from management, training needs assessment could take either light or deep forms. The light forms could be informal needs assessments through observation and informal meetings with employees and managers. The deep forms could take a combination of qualitative and quantitative approaches. Both the light and deep forms of training needs assessment could be done at organization, task or individual levels (Priyadarshini and Dave, 2012). Qualitative data collection methods such as observations, key informant interviews and focus group discussions could be used to

explore competency gaps and training needs. The findings of the qualitative study could then be used to generate quantitative data collection tools using survey methods (Brown, 2002).

Training needs assessment also has its critics. On the one hand, organizations often use strategic business/organizational needs, not the results of a training needs assessment (TNA) to develop training plans. Hence, there is a need to convince line managers to conduct a training needs assessment even when it appears like they already seem to know the training they need for their employees. On the other hand, trainings are only one alternative to solve organizational problems. TNAs may lead to proposition of training as the only/main solution. That is why training needs assessments need to involve at least two phases. The study comprising of two phases. The first, diagnostic phase identifies inconsistencies among performance standard then ranks the inconsistencies by prioritizing them. The second curative phase finds out the root causes of the inconsistencies, and then decides on whether to use training, non-training or a combination of solutions (Iqbal and Khan 2011).

OBJECTIVES OF THE TRAINING NEED ASSESSMENT

The objectives of the training needs assessment were

1. To understand the technical capacity gaps of AICCRA climate-smart feed and forage sector partners

2. To get insight into the topics that need to be included in AICCRA training module preparation on climate-smart feed and forage innovations

APPROACHING THE TRAINING NEEDS ASSESSMENT

The training needs assessment study consisted of desk review, qualitative assessment and quantitative survey. The desk review looked into various Africa RISING related documents such as bi-annual reports, presentations, posters and briefs to identify technical gaps that challenge the feed and forage innovation partners. The study then went on with an exploratory qualitative study with key informants (KI). Actors for KI were identified from various sectors directly and indirectly linked with Africa RISING livestock feed and forage production and utilization research and scaling initiatives. Accordingly, 19 KIs were drawn from the following:

- Forage producing farmers
- Cooperatives/unions engaged in forage seed multiplication
- Extensions offices at regional, zonal and woreda levels
- Research centres (Areka, Debre Birhan, Sinana, Holetta)
- Universities (Debre Birhan, Wachemo and Madda Walabu)
- Non-governmental organizations (Inter Aide, Send a Cow, SNV)
- Microfinance institutions and banks
- Private seed suppliers

- Media

The qualitative study was followed by a structured survey. A structured web-based, quantitative survey questionnaire was developed using MS Forms and shared a link to respondents which can be easily opened on mobile phones or computers. A printed version questionnaire was also used to get the responses of farmers and other targeted stakeholders. The questionnaire included 14 broad questions and was categorized into two parts. The first part has covered general questions about respondents including their gender, age range, educational status, and contact details. The second part consisted of closed and open questions. The closed questions were designed to rate the 14 shortlisted training topics and to assess whether the respondents got training on the stated topics with 12 months. Respondents were asked to rate training topics using a five-point Likert scale, i.e., strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5) which have direct relevance and priority for their work. These training topics were summarized from the KIIs and considered important for multiple stakeholders to expand their knowledge, attitude and skills on the livestock feed and forage production and utilization. Besides, the open questions were devised to gather any training topics that might not be included in the list and any comments from the respondents. Descriptive statistics (i.e., mean and percentage) was used to analyse data from 109 respondents using MS Excel.

FEED AND FORAGE SECTOR GAPS IDENTIFIED

The exploratory qualitative study multiple challenges and gaps associated with the livestock feed and forage production and utilization. The followings were the main points captured from the KIIs (see Table 1 and 2 for details).

- Attitude related gaps: Examples include, extensionists deprioritizing forage, livestock experts taking a reductionist approach to forage and farmers do not allocate enough land for forage production
- Institutions and linkages related gaps: Examples include, forage experts do not approach scaling systematically and forage seed sources not linked with local use
- Technical gaps: Examples include, skill gap in forage seed production, systematically assessing and using locally available feed and forage options, knowledge gap on forage preservation, integration of forage production and farm enterprises, climate-smart forage production, frost resistant feed and forage options, knowledge gap on seasonality of forage availability and limited capacity to plan for scare periods, price setting factors for forage seeds and fundraising and financing forage related initiatives.

The negative statements in the challenges identified were then turned into a positive statements to identify the desired state. The desired states then were further analysed to identify those desired states that could be achieved by technical training intervention and those which require a non-training intervention.

TABLE 1: Translating feed and forage problems into training topics

Problems identified	Turing problems to opportunities	Training topics	Training domain
Lack of attention for feed and forage crops as compared to food cereals, bias towards cereal crop productions	Increase awareness of the importance of forages	The livestock sector as economic engine.	Attitude

Taking livestock feeding and production as separate issue, not integrated in the health, crop production, marketing, etc.	Develop a systemic approach that links livestock production with livestock health, marketing, crop production	A whole farm approach for forage production, including crop-livestock integration	Attitude, Knowledge, skill, attitude
Lack of awareness on preservations of forages and feed techniques	Create awareness on preservation feed and forage resources	Awareness on feed and forage preservation	Awareness, knowledge
Land allocation scarcity for forages cultivation	Improve allocation of land for forage production	Land allocation for forage production	Attitude, knowledge
Limited awareness on improved forage production and utilization	Create awareness on improved forage production and utilization	Awareness creation on improved forage production	Attitude
High turnover of experts/DAs			
Limited scaling of proven feed and forage technologies	Improve scaling of proved feed and forage technologies	Scaling approaches for feed and forage technologies	Knowledge and skill
Improved dairy cow, fattening and poultry promotion without giving much focus on feed and forage sources	Link diary and fattening business with feed and forage technologies	Integrating feed and forage technologies in farm enterprises	Attitude, knowledge and skill
Scarcity of forage species that adapt to climate variabilities and pest infestations	Introduce climate-smart and disease resistant forage species	Climate-smart feed and forage technologies	Knowledge
Feeding of forages at mid-stage without keeping for final harvest for seeds. Difficult to maintain seeds after feeding in vegetative stages.	Improve forage seed production	Forage seed production: Technical and institutional considerations	Attitude, knowledge and skill
Scarcity of improved forage planting materials/ initial seeds	Improve access to forage planting materials	Sources of forage planting materials and access issues	Knowledge
Technical gaps on utilization of locally available forages	Narrow technical gaps on locally available forages	Assessment of local feed and forage availability and utilization	Knowledge, skill
Lack of improved forages for frost resistances	Select frost resistant forage species and management practices	Forest resistant forages and management options	Knowledge
Unbalanced mixing rates of concentrate feeds	Use of balanced concentrated mix	Balancing concentrate feed mix	Knowledge and skill
Low nutritional content of cereal crop residues	Enhance nutritional value of crop residues	Enhancement of nutritional value of crop residues	Knowledge and skill
Lack of knowledge of proper utilization of crop residues	Improve knowledge on utilization of crop residues for feed	Utilization of crop residues for animal feed	Knowledge and skill
Information scarcity on the period of feed accessibility throughout the year.	Improve knowledge on seasonality of feed and forage availability	Building seasonal calendar for feed availability	Knowledge and skill
Lack of planning and preservation of forage for scarcity season.	Develop a plan for feed and forage seasons	Planning for forage scarce seasons	Knowledge and skill

High price of forage seeds and concentrate feeds	Reduce price of forage seeds and concentrate feeds	Knowledge on strategies on reducing the cost of forage seed production	Knowledge
Access to small grants (e.g., fattening, input purchases, etc.)	Improve access to finance and funds	Fundraising and financing for feed and forage enhancement	Knowledge and skill
Supporting farmers in handling to financial transaction	Improve farmers access to microfinance for feed and forage production	Micro-finance for feed and forage	Knowledge
Difficult to reach farmers directly with finance Financial policies and procedures prepared but not yet well communicated well with potential beneficiaries Difficulty to use movable agricultural machinery (i.e., thresher) as collateral	Enhance farmers direct access to finance Local finance officers are well versed with recent finance regulations Movable agricultural machinery used as collateral	Awareness creation on the financial landscape that could support feed and forage innovations and livestock enterprises	Knowledge

TABLE 2. Gaps identified and initial ideas for training topics.

The gaps identified	Training topics	Training domains
Attitude related gaps - Extensionists deprioritize forage - Livestock experts take a reductionist approach to forage Farmers do not allocate enough land for forage production	- The importance of livestock sectors as economic engine, - Basic introduction to the importance of feed and forage for better livestock productivity - Approaching feed and forage production holistically Farmland allocation for forage production	Primarily attitude, Secondary knowledge
Institutions and linkages related gaps - Forage experts do not approach scaling systematically Forage seed sources not linked with local use	- Scaling approaches for feed and forage technologies Understanding forage seed supply system	Primary: knowledge Secondary: skill
Technical gaps - Skill gap in forage seed production - Knowledge gap on forage preservation - Knowledge gap in integration of forage production and farm enterprises - Knowledge gap on climate-smart forage production - Skill gap in systematically assessing and using locally available feed and forage options Knowledge gap in frost resistant feed and forage options	- Forage seed production - Forage preservation methods - Integrating feed and forage technologies in farm enterprises - Climate-smart feed and forage technologies - Assessment of local feed and forage availability and utilization	Primary: Knowledge and Skill Secondary: Attitude

	Forest resistant forage technology options	
Capacity gap in crop residue and feed concentrate use	- Using crop residue for livestock feed - Enhancing nutritional value of crop residue Balancing concentrate feed mix for livestock production	Primary: Knowledge and Skill Secondary: Attitude
Knowledge gap on seasonality of forage availability and limited capacity to plan for scare periods	- Building seasonal calendar for feed availability Planning for forage scarce seasons	Primary: Knowledge Secondary: Skill
Knowledge gap on price setting factors for forage seeds	Strategies to reduce the cost of forage seed production and marketing	Knowledge
Capacity gap on fundraising and financing forage related initiatives	- Fundraising for feed and forage enhancement - Micro-finance for feed and forage promotion Understanding financial landscape that could support feed and forage innovations and livestock enterprises	Primary: Knowledge Secondary: Skill

Identification of a list of training topics

After thorough discussions among the research team, the following training topic were generated to address the challenges indicated by key informants. These topics were grouped under four categories (Table 3). Note that some of the topics generated from turning the desired states into training topics (Table 2) were dropped. Some of the topics were found to be better solved with non-training interventions. Other topics were found redundant and were replaced by a broader training topic category. This is an essential step in a training needs analysis (Iqbal and Khan 2011).

TABLE 3. Topics proposed to address capacity gaps related to livestock feed and forage production and utilization chain.

The gaps identified	Training topics
General	1. Introduction of feed and forage technologies for better livestock productivity
	2. Importance of livestock sector as economic engine
	3. Strategies to increase land for forage production
	4. Integrating feed and forage technologies into the farm enterprises
Technologies related	5. Climate-smart forage production and utilization methods
	6. Ration formulation for various livestock production systems
	7. post-harvest feed management and preservation technologies

	8. Assessment tools/techniques of local feed and forage resources
	9. Crop residue nutritional improvement methods/ techniques
	10. Methods for planning annual feed requirements
Seed production related	11. Feed and forage seed production techniques
	12. Strategies to reduce the cost of forage seed production and marketing
Scaling and business related	13. Scaling approaches for feed and forage technologies
	14. Finance and fund mobilization for feed and forage development

Description of respondents

The quantitative survey returned responses 109. Out of the total respondents, 15% were female and 85% were male. Out of the total, 25% of the respondents were age 20-30, 33% age 31-40, 31% age 41-50, and 11% age 51-60 years old (see Figure 1). The educational status indicated, 15% Diploma, 35% BSc, 28% MSc, 5% PhD, and 17% other. Other educational status, which aggregates all the education status below Diploma, i.e. high school, and also adult educations. Professionally 20% were farmers, 20% DAs, 20% Zonal/district experts, 8% regional/federal experts, 14% researcher/Lecturers, 6% private sector, 6% media, 6% non-governmental organizations (NGO) (see Figure 2).

Figure 1. Gender and age category distributions of the respondents (n=109).

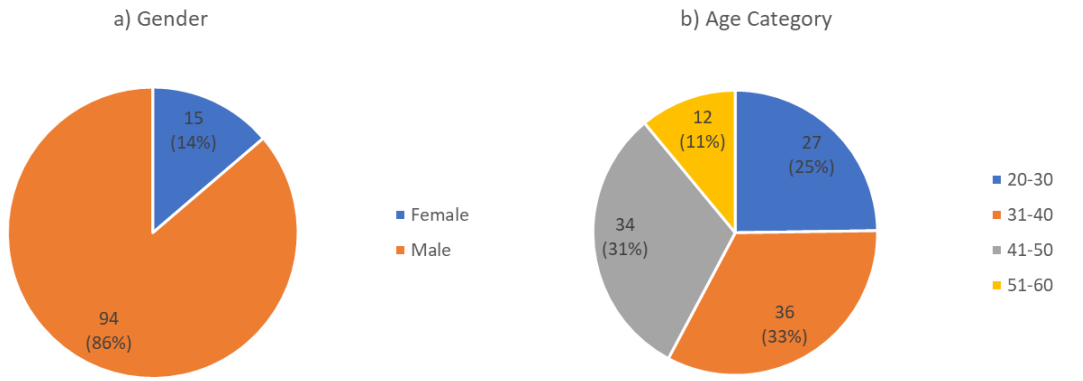
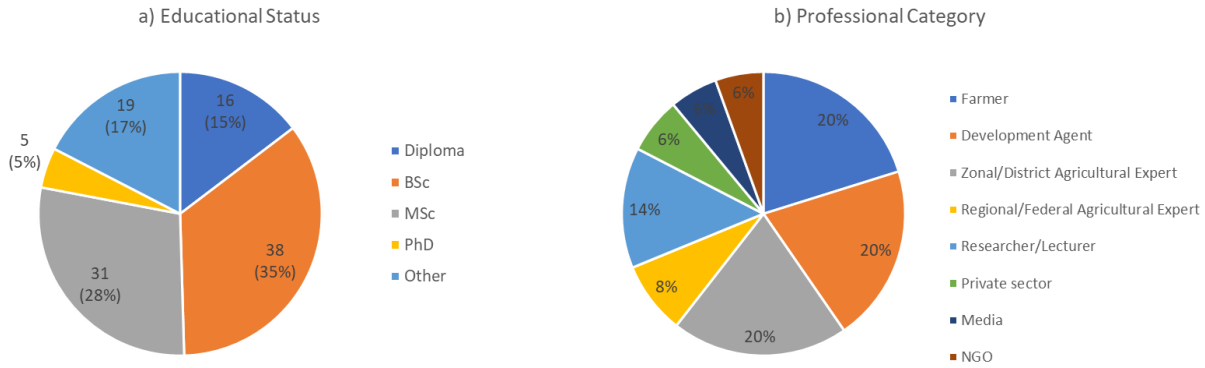


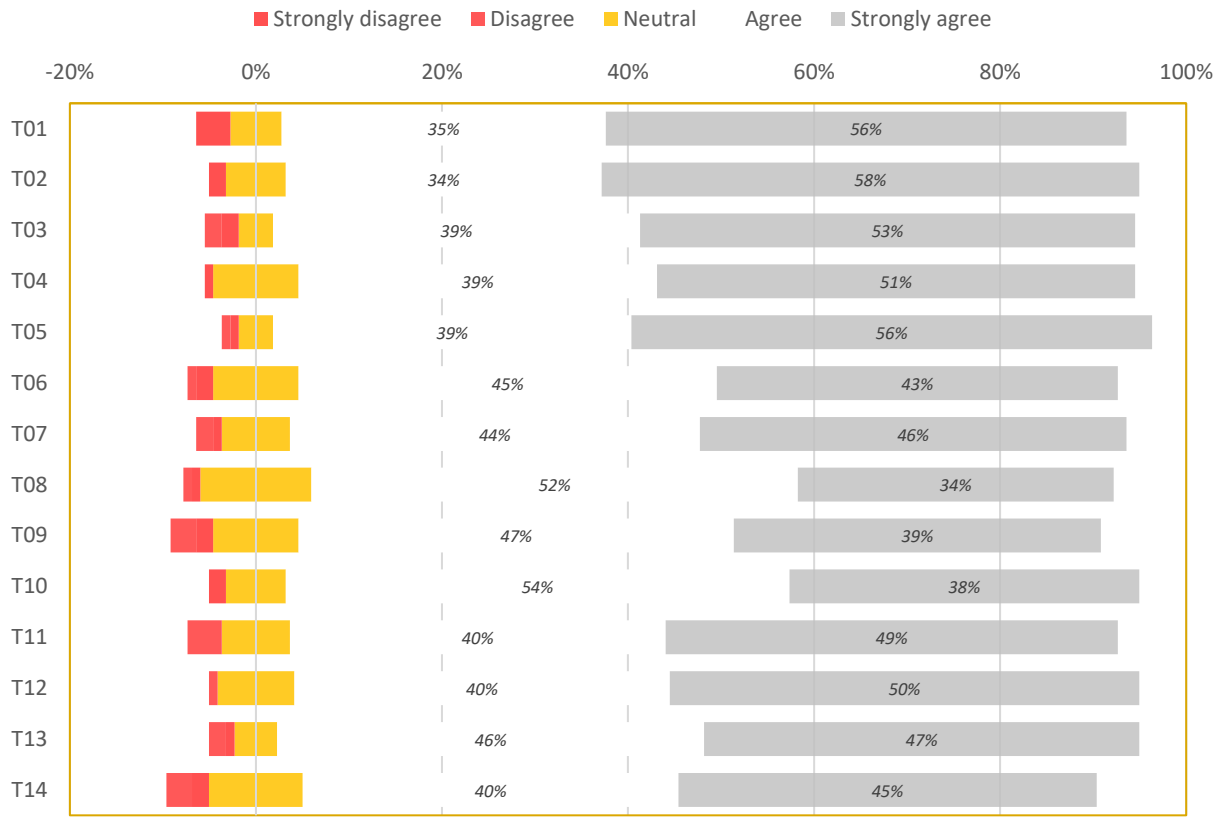
Figure 2. Educational status and professional categories of the respondents (n=109).



Ratings of training needs

The analysis of the survey reveals that the listed training topics are agreed by 90% of the overall respondents (see Figure 3). This is not surprising given that the initial list for ranking was generated through an exploratory qualitative study. The result shows strong interest in getting evidence on the importance of livestock sector as an economic engine, making forage production climate-smart and means of securing more land for forage cultivation.

Figure 3. Respondents rate the training topics using the Likert scale (1-5).



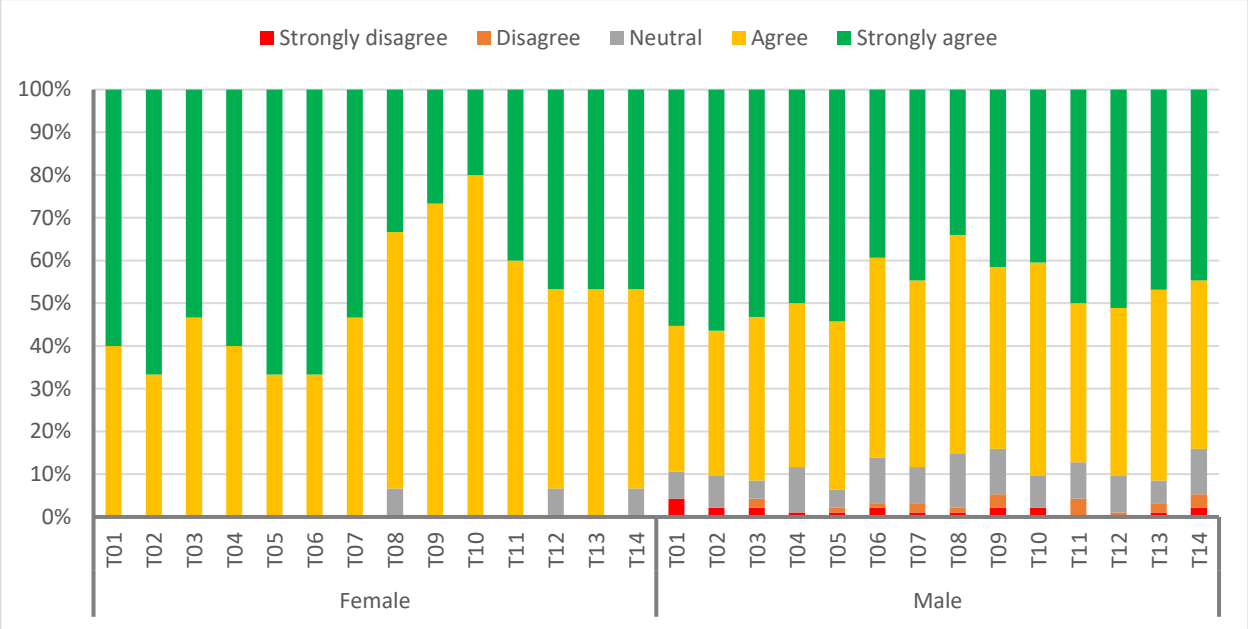
Where

T01 *1. Introduction to feed and forage technologies for better livestock productivity*
T02 *2. Importance of livestock sector as economic engine*
T03 *3. Strategies to increase land for forage production*
T04 *4. Integrating feed and forage technologies into the farm enterprises*
T05 *5. Climate-smart forage production and utilization methods*
T06 *6. Ration formulation for various livestock production systems*
T07 *7. Post-harvest feed management and preservation technologies*
T08 *8. Assessment tools/techniques of local feed and forage resources*
T09 *9. Crop residue nutritional improvement methods/ techniques*
T10 *10. Methods for planning annual feed requirements*
T11 *11. Feed and forage seed production techniques*
T12 *12. Strategies to reduce the cost of forage seed production and marketing*
T13 *13. Scaling approaches for feed and forage technologies*
T14 *14. Finance and fund mobilization for feed and forage development*

There is no great difference between men and women respondents in the overall importance of the different training topics identified in the exploratory. However, the visual data presented below shows some contrasts (Figure 4). For example, one could see a lot more men than women who responded

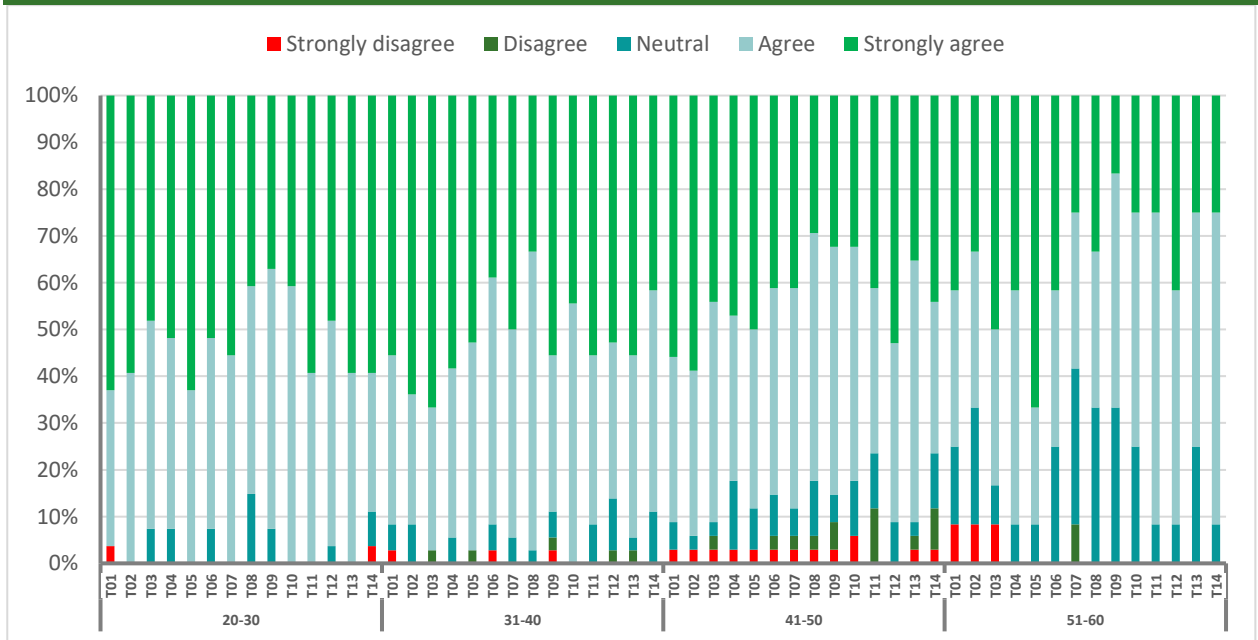
neutral or even disagree with the training topics identified. This reveals a general observation that men often are more exposed to training programs on forage and other innovations.

Figure 4. Training needs disaggregated by gender.



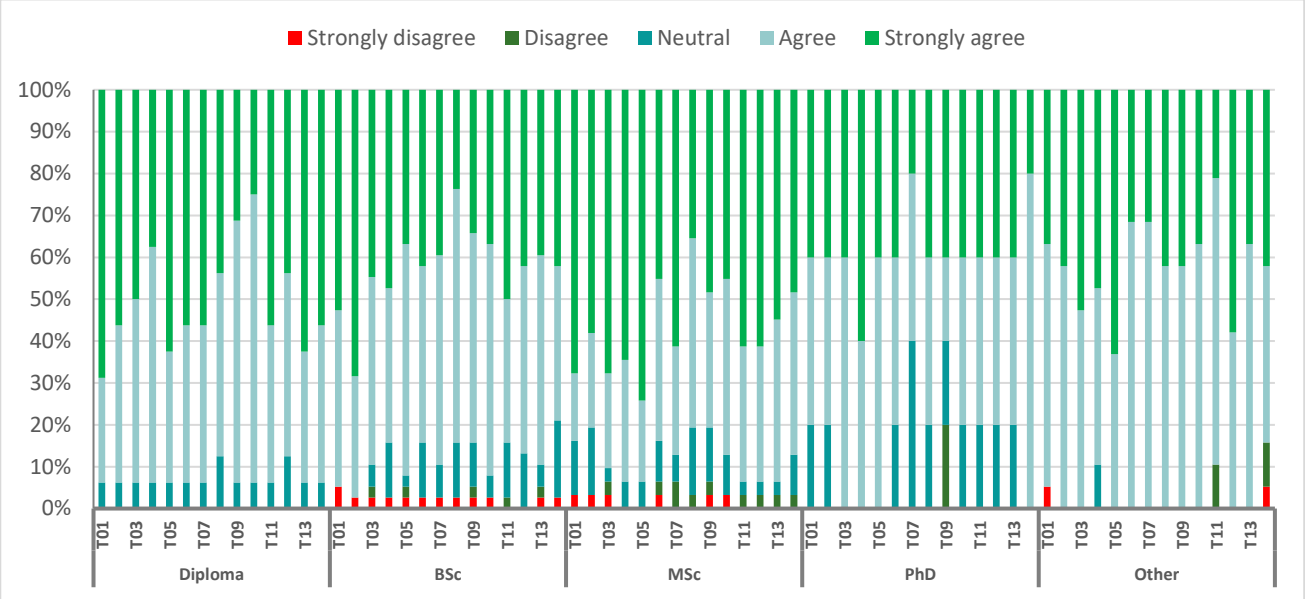
The age disaggregated data also showed a slight difference. Although it is in no way possible to claim statistical significance, the visual difference between the different age group shows that more and more older people felt indifferent about the importance of the training topics identified during the exploratory stage (Figure 5). This could be explained by the fact that the older respondents had more exposure for technical training than their younger counterparts.

Figure 5. Training needs assessment disaggregated by age.



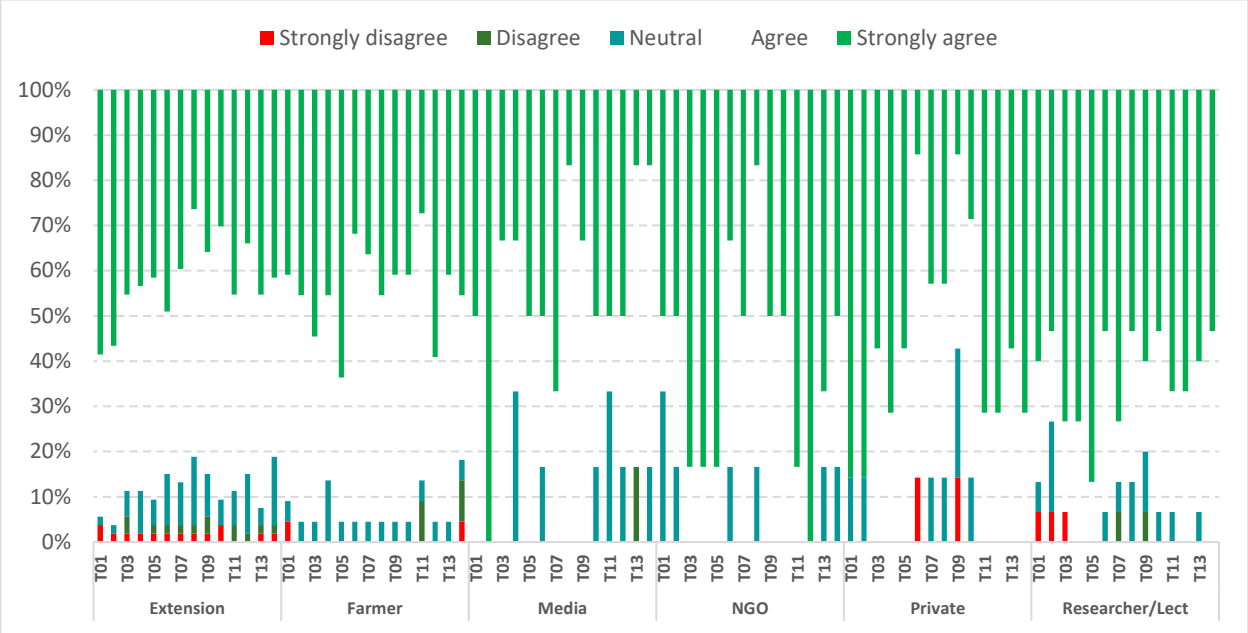
The disaggregation of training needs by professional category also shows a little bit of difference (Figure 6). As expected, those below a diploma status wanted most of the trainings. A little more people with BSc, MSc and PhD holders than diploma and less holders seem to rate training topics neutral or even disagree. However, note that these comparisons are not based on statistical tests.

Figure 6. Training needs assessment disaggregated by educational status.



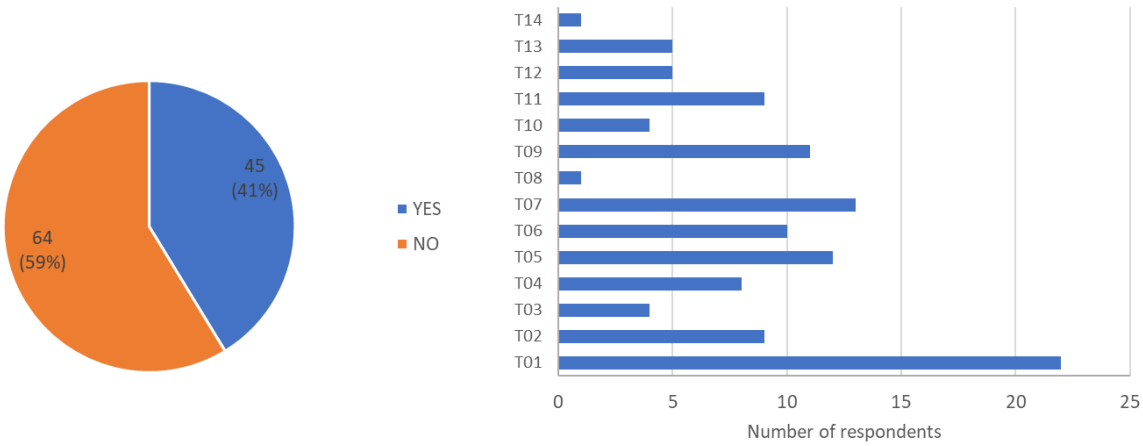
The final disaggregation was done along professional lines. This seems to be the more diverse categorization as the preferences of respondents in the different groups showed some variation (Figure 7). For example, for respondents in media, the topic on economic importance of the livestock sector scored high and technically topics such as crop residue treatment scored less. Respondents in the NGO sector disfavour the introductory sections and want more on areas of reducing the cost of production of forages. The private sector actors seemed to like more topics such as how to enhance their access to land and integrate forages in their farm enterprises and on climate proofing their forage production. They registered less interest particularly on crop residue treatment. For the researchers the topic on the economic importance of livestock were less favoured and topics in the areas of scaling and financing, climate proofing forage production and integration of forage in farm enterprises were more favoured. The farmer and extension groups have a more equivalent preference of all the topics identified in the exploratory needs assessment.

Figure 7. Training needs assessment by professional category.



Respondents were asked whether they took any training (at least one or more) related to the listed training topics within 12 months. About 41% of the respondents answered they received at least one or more refresher trainings (Figure 8). Out of these, most indicated "Introduction to feed and forage technologies for better livestock productivity". And the other 59% respondents didn't get any form of training related to the listed topics (Figure 8). It is important to note that topics such as finance and fund mobilization, forage planning tools, scaling approaches and costing forage production scored the lowest rating of pervious training attendance.

Figure 8. Respondents received training from the listed topics within 12 months.



IMPLICATIONS

As stated in the objective section, the purpose of conducting the training needs assessment was to get an insight into the current gaps in desired state of feed and forage innovations and identify training topics. The exploratory qualitative study identified the core aspects of the train needs of various actors in feed and forage innovations. The subsequent quantitative study confirmed the findings of the qualitative study, showing over 90% agreement among respondents in the training topics identified in the qualitative study.

Further deliberation among the research team on the findings of the training needs assessment study led to development of tentative list of training topics. Here again, it was found important to combine a number of topics into a more meaningful category. Some of the topics identified in the training needs assessment such as the issue of climate-smartness were decided to be cross cutting issue. Some of the training topics such as introductory topics on the importance of the livestock sector and available feed and forage options are decided to be given for media people only. The training topic on forage seed production is dedicated for private business on forage seed production. These are all practical reasons taken into account in translating the training needs assessment into training content development. The tentative category of list of training topics include cultivated forage production and utilization, crop residue nutritional improvement methods/techniques, methods for planning annual feed requirements, ration formulation for smallholder dairy cattle, scaling and financing feed and forage innovations, Forage seed and planting material production techniques and basic introduction to the livestock sector and feed and forage innovations.

TABLE 4. Working training topics and initial training content development

Target groups	Capacity development focus areas for module preparation
Extension	1. Cultivated forage production and utilization: Target area: Highland mixed crop-livestock system - Enterprise: Smallholder dairy - Major annual and perennials: Growth requirements, growing niches, agronomic practices o Annuals: Oat, vetch, cowpea, lablab, fodder beet o Perennials: *Brachiaria* , Desho grass, Napier grass, alfalfa, Rhodes grass, Tree lucerne - Utilization o Harvesting methods o Feeding practice Conservation methods
	2. Crop residue nutritional improvement methods/techniques - Description of available options for the highland Ethiopia: - Opportunities and challenges - Available technological options
	3. Methods for planning annual feed requirements - Scope: General introduction to available methods such as FAO 1987 protocol/ tools such as FEEDBASE (feed supply and demand assessment)
	4. Ration formulation for smallholder dairy cattle (to be worked on with Melkamu) - Target area: Highland mixed crop-livestock system - Enterprise: Smallholder dairy

	- Focus: On Farm Feed Advisory Tool o Practical introduction and calibration of the tool Feed budgeting

	5. Scaling and financing feed and forage innovations
	- Scaling approaches
	  o Basic concepts of scaling of feed and forage innovations
	  o Basics of multi-stakeholder engagement for feed and forage development
	  o Developing and facilitating scaling strategy for feed and forage innovations
	- Fundraising and financing
	  o Resource mobilization for feed and forage innovations scaling

Forage seed producers	Forage seed and planting material production techniques
	- Target forages-
	  o Annuals: Oat, vetch, cowpea, lablab, fodder beet
	  o Perennials: *Brachiaria*, Desho grass, Napier grass, alfalfa, Rhode's grass, tree lucerne
	- Agronomic practices
	
	Seed harvest and handling (e.g., cleaning, grading and packaging)

Media (regional radios and TVs)	Topics to be included: - Importance of livestock sector as economic engine (contribution to national GDP, employment, food security, nutrition, gender equity and others) - Major constraints/challenges for livestock sector transformation - Major livestock related policies and opportunities o Available livestock feed and forage technologies Emerging approaches for feed and forage production: With a focus on the importance of irrigated forage production

Acknowledgement

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ANNEXES

Annex 1: Guiding questions used in the key informant interviews (KIIs)

Key questions to guide discussions with different actors

- For experts/farmers:
    - What do you think are the major challenges in cultivating forages and use in your areas?
    - If you are asked to identify training topics you think are curial in addressing the challenges mentioned in the previous question, what would come to your mind, free list of areas of training you think would be needed.
- For media people:
    - What is your level of knowledge of feed and forage options and their importance for livestock production?
    - What are the areas of knowledge that you would need to develop good stories about feed and forage production and utilization?
- For finance people:
    - What are the business opportunities you see in financing feed and forage production?
    - What are the knowledge areas you need to design a viable financial product for feed and forage production and utilization?
- Of the lists indicated above, can we try to group them into:
    - Knowledge related ones
    - Attitude related ones
    - Skill related ones

- How do you think trainings in the above areas could help you do your job better and reach many farmers with feed and forage innovations?

Annex 2: Lists of key informants and their institution

No.	Contact name	Institution name	Site name	Type of actor	Focus area
1	Feleke Tadesse	Wachemo University	Lemo	Public	Research, Extension
2	Mesfin Zenebe	Send a Cow	Lemo	NGO	Extension
3	Mesfin Desalegn	Inter Aide	Lemo	NGO	Extension
4	Tsedeke Zewde	Hadiya Zone Livestock and Fishery Department	Lemo	Public	Extension
5	Negatu Eyako	Misha Woreda Livestock and Fishery Department	Lemo	Public	Extension
6	Adnew Ayele	Farmer	Lemo	Private	Seed multiplication
7	Tagese Wolebo	Metemamen Microfinance	Lemo	Private	Finance
8	Zenbaba Telila	North Shewa Zone Livestock Development & Promotion Office	Basona	Public	Extension
9	Zegeye W/Agenegehu	Basona Worena Zone Livestock Development & Promotion Office	Basona	Public	Extension
10	Lulseged Alemayehu	Debre Birhan Agricultural Research Center	Basona	Public	Research
11	Estifanos Shenkute	Amhara Saving and Credit Association (ACSI)	Basona	Private	Finance
12	Hulunim Gatew	Debre Birhan University	Basona	Public	Research, Extension
13	Solomon Dadi	Bale Zone Livestock and Fishery Resource Development Office	Sinana	Public	Extension
14	Muawuya Fu'ad	Sinana Woreda Livestock and Fishery Resource Development Office	Sinana	Public	Extension
15	Oliyad Degu	Oromia International Bank (OIB)	Sinana	Private	Finance
16	Sultan Mohammed	Oromia Broadcasting Network (OBN)	Sinana	Public	Media
17	Fitsum Sahle Medhin	Independent	Addis Ababa	Private	Media
18	Tesfaye Kumsa	Ethiopian Forage Seed Business Association	Addis Ababa	Private	Forage Seed Business
19	Mekdes Moges	SNV	Addis Ababa	NGO	Diary development

Annex 3: Detail questionnaire contents of the training need assessment on Livestock Feed and Forage Innovations (LFFI)

Training Need Assessment on Livestock Feed and Forage Innovations (LFFI)

Link to online MS Forms: https://forms.office.com/r/TDf36Kqta9

Thank you for making the time to fill the questionnaire. The questionnaire may take 3-6 minutes. We are assessing the training needs of our livestock feed and forage development partners as part of ILRI-AICCRA-LFFI project supported by World Bank. In the following questions, we want to know the area that you would see as useful in terms of building your capacity and doing a better livestock feed and forage development and scaling.

1. Name : _____ 2. Gender: M/F 3. Tel./ Mobile number: _____
4. E-mail: _____ 5. Organization: _____ 6. City/ Town: _____
7. Age: 20-30; 31-40; 41-50; 51-60 8. Educational status: Diploma; BSc; MSc; PhD
9. Professional category: Farmer; Researcher / Lecturer; Development Agent; Zonal/District Agricultural Expert; Regional/Federal Agricultural Expert; Private sector; Media; NGO
10. Please use the following ratings: *Strongly disagree, disagree, neutral, agree, strongly agree* on the possible training topics listed below in terms of whether you see the topics indicated have a direct relevant for your work. (Please rate them by ticking one of the ratings)

Training topics	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Introduction of feed and forage technologies for better livestock productivity					
2. Importance of livestock sector as economic engine					
3. Strategies to increase land for forage production					
4. Integrating feed and forage technologies into the farm enterprises					
5. Climate-smart forage production and utilization methods					
6. Ration formulation for various livestock production systems					
7. Post-harvest feed management and preservation technologies					
8. Assessment tools/techniques of local feed and forage resources					
9. Crop residue nutritional improvement methods/ techniques					
10. Methods for planning annual feed requirements					
11. Feed and forage seed production techniques					
12. Strategies to reduce the cost of forage seed production and marketing					
13. Scaling approaches for feed and forage technologies					
14. Finance and fund mobilization for feed and forage development					

11. Any other training priorities you like to indicate us (please list below)

_____

12. Have you received training in any of the above topics in the last 6-12 months? (Yes / No)
13. If YES, which topics?

Training Topics
1. Introduction of feed and forage technologies for better livestock productivity
2. Importance of livestock sector as economic engine
3. Strategies to increase land for forage production
4. Integrating feed and forage technologies into the farm enterprises
5. Climate-smart forage production and utilization methods
6. Ration formulation for various livestock production systems
7. Post-harvest feed management and preservation technologies
8. Assessment tools/techniques of local feed and forage resources
9. Crop residue nutritional improvement methods/ techniques
10. Methods for planning annual feed requirements
11. Feed and forage seed production techniques
12. Strategies to reduce the cost of forage seed production and marketing
13. Scaling approaches for feed and forage technologies
14. Finance and fund mobilization for feed and forage development

14. Any comment?

_____

THANK YOU!

AICCRA
Accelerating the Impact of CGIAR Climate Research for Africa

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) brings together some of the world's best researchers in agricultural science, development research, climate science and Earth system science, to identify and address the most important interactions, synergies and trade-offs between climate change, agriculture and food security. For more information, visit us at https://ccafs.cgiar.org/.

Titles in this series aim to disseminate interim climate change, agriculture and food security research and practices and stimulate feedback from the scientific community.

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